

FACT SHEET FOR NPDES PERMIT WA0037192
CITY OF ABERDEEN WASTEWATER TREATMENT PLANT

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City of Aberdeen Wastewater Treatment Plant

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of Permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 RCW, which defines the Department of Ecology's (Department) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits [Chapter 173-220 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (Chapter 173-220-060 WAC) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (Chapter 173-220-050 WAC). The fact sheet and draft permit are available for review (see [Appendix A--Public Involvement](#) of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant:	City of Aberdeen
Facility Name and Address:	Aberdeen Wastewater Treatment Plant 1205 West State Street Aberdeen, WA 98520
Type of Treatment:	Conventional Activated Sludge, Chlorine Disinfection and Dechlorination
Discharge Location:	Grays Harbor Estuary, Mouth of Chehalis River Latitude: 46° 57' 48" N Longitude: 123° 49' 25" W.
Water Body ID Number:	WA-22-0030

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

BACKGROUND

The City of Aberdeen publicly owned treatment works (POTW) is located in Aberdeen, Washington, and discharges treated wastewater through an outfall into the northern Grays Harbor channel at the mouth of the Chehalis River. The Aberdeen POTW provides secondary treatment, disinfection with chlorine, and dechlorination prior to discharge. Based on the last four years of record, the average discharge flow rate is 4.5 million gallons per day (MGD), with the highest monthly average flow of 8.75 MGD, and highest daily flow rate of 17.0 MGD.

The city of Aberdeen upgraded its primary wastewater treatment plant to provide secondary treatment of sanitary sewage in 1981. The plant was designed to treat an average daily flow of 4.7 MGD, a maximum daily flow of 8.75 MGD, and a maximum hourly flow of 13.0 MGD. The City is planning to expand the treatment system to accommodate the flow rates that exceed system capacity. A Facility Plan was submitted for approval on December 31, 1996.

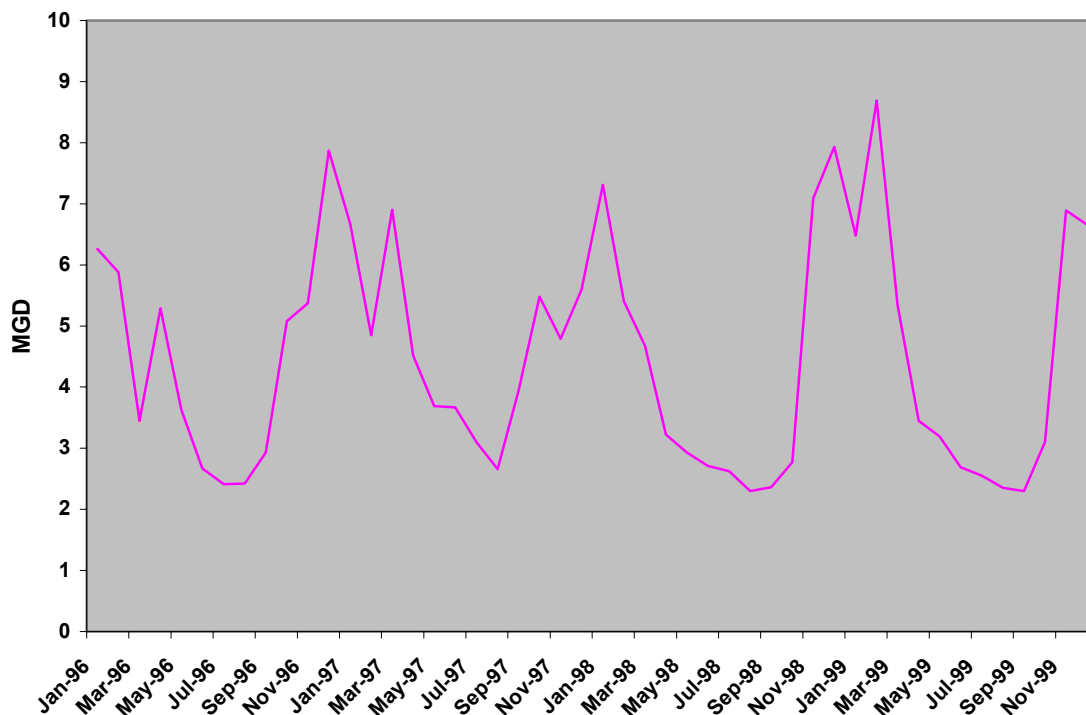
The Aberdeen publicly owned treatment works (POTW) is classified by EPA as a major permit due to the size and category of the effluent discharge.

COLLECTION SYSTEM STATUS

The Aberdeen wastewater treatment plant treats sanitary wastewater collected from the cities of Aberdeen and Cosmopolis. The only major industrial user contributing wastewater to the collection system is the Aberdeen Sanitary Landfill, which intermittently discharges landfill leachate at a rate of 18,600 gallons per day.

Historically, flow rates to the plant often exceeded the design flow as a result of excessive inflow and infiltration, resulting in bypasses and system overflows. The City began a series of improvements in 1977 to reduce the frequency and duration of excessive flow to the plant from the collection system. All rigid joint sanitary sewer mains installed prior to 1960 were replaced with PVC mains containing rubber-gasketed joints. Over 62 miles, or 75 percent, of main and stub sewers were replaced. The City disconnected surface drains found to be connected to the sanitary sewer system. Side sewers, the sewer pipes serving individual properties, were replaced or repaired where found to be leaking. Despite the substantial reductions in wet weather flows, a significant difference in dry vs. wet weather flows still exists (Chart 1).

Chart 1: Aberdeen POTW, Average Monthly Flow Rate



Treatment Processes

The treatment facility includes mechanically cleaned bar screens, comminutor, influent flow measurement, grease removal, primary settling, activated sludge with high rate step aeration, clarification, chlorine disinfection, dechlorination with sulfur dioxide, effluent flow metering and discharge through a multi-port diffuser outfall.

DISCHARGE OUTFALL

Secondary treated and disinfected effluent is discharged from the facility via a multiport diffuser into the Grays Harbor estuary 135 feet beyond the defined outer harbor line at a depth of 17 feet below mean lower low water. The outfall diffuser is a pile-supported, 24-inch diameter ductile iron pipe, attached perpendicular to the end of the outfall pipe. The diffuser section is aligned (or parallel) with the river channel. The diffuser section is 88 feet in length, with five 10-inch ports on 22-foot centers.

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the primary and secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste. Sludge from the primary and secondary clarifiers is mechanically dewatered, pressed, converted to biosolids and used for landfill.

PERMIT STATUS

The previous permit for this facility was issued on June 22, 1990, with an effective date of June 26, 1990. The previous permit and subsequent modifications placed effluent limitations on five-day Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), pH, Fecal Coliform bacteria, and total residual chlorine.

An application for permit renewal was submitted to the Department on December 1, 1999, and accepted by the Department on February 17, 2000.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection on March 30, 2000. The facility was performing adequately and all records were in order. An unannounced Class 2 inspection (compliance evaluation with sampling) was conducted on March 17-19, 1997. The inspection coincided with an extreme rainfall event, the 2nd highest daily flow rate of the last four years, hydraulically overloading the treatment plant to double the design loading rate. The influent and effluent both met permit effluent limits while effective disinfection was still achieved based on fecal coliform counts. The split sample results showed good agreement between Ecology and Aberdeen labs.

During the history of the previous permit, the Permittee has improved its compliance rate, based on Discharge Monitoring Reports (DMRs) and other information submitted to the Department and inspections conducted by the Department. The frequency of bypass events which were common in the early 1990's has been greatly reduced. Episodes of noncompliance since 1995 include:

1. Multiple violations of BOD percent removal limits, winter of 95/96
2. Multiple violations of fecal coliform weekly limits, 1996
3. Violations of BOD percent removal and average pounds per day, winter of 96/97
4. Single nominal violations of residual chlorine, pH, and BOD percent removal limits, winter 98/99.

Enforcement action in response to noncompliance included an amended order in 1995 to address inflow and infiltration that contributed to the BOD percent removal violations and a warning letter on the fecal coliform limit violations.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The entire spectrum of priority pollutant analyses was performed. Only those pollutants which were detected are summarized here. The effluent is characterized as follows:

Table 1: Wastewater Characterization

Average values although some values derived from a single analysis and reported below the practical quantification level.

<u>Parameter</u>	<u>Concentration</u>
Temperature, winter	12.2 ^o C
Temperature, summer	16.7 ^o C
Fecal Coliform Bacteria	40/100ml
BOD 5-day	7 mg/L
Total residual Chlorine	100 µg/L
Total Suspended Solids	5 mg/L
Ammonia (as N)	7.35 mg/L
Dissolved Oxygen	6.3 mg/L
Iron	240 µg/L
Copper	8 µg/L
Chromium	6 µg/L
Nickel	1.6 µg/L
Zinc	17 µg/L
Chloroform	3 µg/L
Bromodichloromethane	0.6 µg/L
Toluene	1 µg/L
Dibromochloromethane	0.15 µg/L
1,4 Dichlorobenzene	1 µg/L
2,4,6 Trichlorophenol	0.1 µg/L
2,6 Dinitrotoluene	0.5 µg/L
Di-n-butylphthalate	0.2 µg/L
Bis(2-Ethylhexyl)phthalate	1.1 µg/L
Benzidine	0.4 µg/L (detection was uncertain)

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to

notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from the previous permit as follows:

Table 2: Design Standards for Aberdeen WWTP.

Parameter	Design Quantity
Monthly average dry weather flow	4.7 MGD
Monthly average wet weather flow	8.75 MGD
Instantaneous peak flow	13.0 MGD
BOD ₅ influent loading	6510 lb./day
TSS influent loading	7150 lb./day
Design population equivalent	29,900

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD₅, and TSS are taken from Chapter 173-221 WAC are:

Table 3: Technology-based Limits.

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD ₅ (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
Interim Chlorine Limit	Average Monthly Limit = 0.5 mg/L Average Weekly Limit = 0.75 mg/L

The technology-based monthly average limitation for chlorine is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/Liter chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, Wastewater Engineering, Treatment, Disposal and Reuse, Third

Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/Liter chlorine limit on a monthly average basis.

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

BOD

Monthly effluent mass loadings (lbs/day) for BOD discharge were calculated as the maximum monthly influent design loading (6510 lbs/day) x 0.15 = 977 lbs/day.

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 1465 lbs/day.

TSS

Monthly effluent mass loadings (lbs/day) for TSS were calculated as the maximum monthly influent design loading (7150 lbs./day) x 0.15 = 1073 lbs./day.

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 1609 lbs/day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (Chapter 173-201A-030 WAC) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDegradation

The state of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the State Antidegradation Policy can be obtained by referring to Chapter 173-201A-070 WAC.

The Department has reviewed existing records and is unable to determine if all ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of Chapter 173-201A-100 WAC.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to inner Grays Harbor which is designated as a Class B receiving water in the vicinity of the outfall. Other nearby point source outfalls include Weyerhaeuser in Cosmopolis and Grays Harbor Paper in Hoquiam. Urban stormwater also flows to the estuary. Significant non-point sources of pollutants include those upriver sources contributing to the fecal coliform problems in inner Grays Harbor. Inner Grays Harbor often exceeds the numeric temperature criteria during the summer months, but it is a natural condition due to the effect of solar heating in the shallow bay. The standard is therefore met. Characteristic uses include the following:

Water supply (industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; secondary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for most uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	5 mg/L minimum

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Temperature	19 degrees Celsius maximum or incremental increases above background
pH	7.0 to 8.5 standard units
Turbidity	less than 10 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition during wet season and dry season flows by the use of the UDKHDEN model and calibration from a detailed field dye study during dry season flows. The dilution factors have been determined to be:

	Acute	Chronic
Aquatic Life, Winter	14	18
Aquatic Life, Summer	14	27
Human Health, Carcinogen	N/A	45
Human Health, Non-carcinogen	N/A	40

The derivation of water quality-based limits takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The primary critical condition for the Grays Harbor estuary in the vicinity of the outfall is during the wet season using the highest monthly average effluent flow during low slack tide when river flow predominates the mixing zone. Ambient data in the vicinity of the Permittee outfall was averaged from nearby ambient monitoring stations (GYS004 & GYS008) and the recent TMDL study for fecal coliform. The following data represent the critical 90th percentile values.

Parameter	Value used
Salinity, wet season	1.0 ppt
Salinity, dry season	7.8 ppt
Temperature, wet season	16° C
Temperature, dry season	19° C
pH (high)	7.6
Dissolved Oxygen	8.0 mg/L
Total Ammonia-N	0.04 mg/L

BOD₅--This discharge with technology-based limitations results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. Ambient monitoring in the vicinity of the

discharge revealed no occurrences of dissolved oxygen below the criterion of 5.0 mg/L. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature, Summer--The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 19°C and the effluent temperature is 20°C. The predicted resultant temperature at the boundary of the chronic mixing zone is 17.4°C and the incremental rise is less than 0.1 °C.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit. Monitoring of effluent temperature is required in order to provide information for another analysis of potential to violate the Water Quality Standard for temperature at permit renewal.

pH--Because of the high buffering capacity of marine water, compliance with the technology-based limits of 6 to 9 will assure compliance with the Water Quality Standards for Surface Waters.

Fecal coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 18. The impact from the Aberdeen POTW Outfall on the fecal coliform levels in the Grays Harbor Estuary was evaluated in the TMDL report and determined to be insignificant. Discharges from system overflows and bypasses can be significant, but they are not allowed by this permit except in exceptional cases.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: chlorine, ammonia, certain organics and heavy metals. A reasonable potential analysis (See Appendix C) was conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

The determination of the reasonable potential for chlorine, ammonia, and detected priority pollutants to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The critical condition in this case occurs during the wet season using the highest monthly average effluent flow during low slack tide when river flow predominates the mixing zone. Ambient data in the vicinity of the Permittee outfall was taken from nearby ambient monitoring stations and the recent draft TMDL study for fecal coliform. The following data represent the critical 90th percentile values. The parameters used in the critical condition modeling are as follows: acute dilution factor of 14, chronic dilution factor of 18, receiving water temperature 17.3°C, and a receiving water pH of 7.6. The chronic dilution factor is 27 during the summer months. The critical condition for ammonia occurs in the dry season, when higher ambient temperatures, coupled with high pH values increase the toxicity of ammonia.

Valid ambient background data was available for the priority pollutants likely to be detected in the receiving water. A determination of reasonable potential resulted in no reasonable potential for all pollutants with the exception of chlorine and ammonia. Water quality criteria for metals in Chapter 173-201A WAC are based on the dissolved fraction of the metal.

Effluent limits were derived for ammonia and chlorine which were determined to have a reasonable potential to cause a violation of the Water Quality Standards. Effluent limits were calculated using methods from EPA, 1991 as shown in Appendix C.

The resultant effluent limits are as follows:

Pollutant	Average Monthly Limit	Maximum Daily Limit
Ammonia, as nitrogen	39 mg/Liter	89 mg/Liter
Total residual chlorine	100 µg/Liter	270 µg/Liter

The proposed permit contains a compliance schedule for meeting the water quality-based limits for ammonia and total residual chlorine. Prior to authorizing this compliance schedule the Department required the Permittee to evaluate the possibility of complying with the limitations by changes other than construction.

The proposed permit contains interim limits for ammonia and total residual chlorine as required by Chapter 173-201A WAC. The limits are based on demonstrated performance (ammonia) and existing technology-based limits (chlorine).

The resultant interim effluent limits are as follows:

Pollutant	Average Monthly Limit	Maximum Daily Limit
Ammonia, as nitrogen	90 mg/Liter	N/A
Total residual chlorine	0.5 mg/Liter	0.75 mg/Liter

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

In accordance with Chapter 173-205-040 WAC, the Permittee's effluent has been determined to have the potential to contain toxic chemicals. The proposed permit would ordinarily contain requirements for whole effluent toxicity testing as authorized by RCW 90.48.520 and 40 CFR 122.44 and in accordance with procedures in Chapter 173-205 WAC. However, the Permittee is improving pollution control in order to meet new chlorine and ammonia limits. The results of an effluent characterization for toxicity would not be accurate until after the improvements have been completed.

Special Condition S9 delays effluent characterization for WET until the implementation of the final chlorine and ammonia limits required in Special Condition S1A.

Chapter 173-205-030(4) WAC allows the Department to delay effluent characterization for WET for existing facilities that are under a compliance schedule in a permit to implement technology-based controls or to achieve compliance with surface water quality-based effluent limits.

When the WET tests during effluent characterization indicate that no reasonable potential exists to cause receiving water toxicity, the Permittee will not be given WET limits and will only be required to retest the effluent prior to application for permit renewal in order to demonstrate that toxicity has not increased in the effluent.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC₅₀, EC₅₀, IC₂₅, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center 360-407-7472 for a copy. The Department recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

Acute toxicity was measured during effluent characterization in the previous permit term. Acute toxicity was found to be at levels that, in accordance with Chapter 173-205-050(2)(a) WAC, have a reasonable potential to cause receiving water toxicity. An acute toxicity limit is therefore required. The acute toxicity limit is no statistically significant difference in test organism survival between the acute critical effluent concentration (ACEC), 7.7 percent of the effluent, and the control.

WAC 173-205-030(4) allows the Department to delay effluent characterization for WET for existing facilities that are under a compliance schedule in a permit to implement technology-based controls or to achieve compliance with surface water quality-based effluent limits.

The WET tests during effluent characterization indicate that no reasonable potential exists to cause receiving water chronic toxicity, and the Permittee will not be given a chronic WET limit and will only be required to retest the effluent prior to application for permit renewal in order to demonstrate that chronic toxicity has not increased in the effluent. Recently adopted federal regulations for permit application require WET testing prior to application.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the effluent is likely to have chemicals of concern for human health. The discharger's high priority status is based on the discharger's status as a major discharger and data indicating regulated chemicals may occur in the discharge.

A determination of the discharge's potential to cause an exceedance of the water quality standards was conducted as required by 40 CFR 122.44(d). The reasonable potential determination was evaluated with procedures given in the Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) and the Department's Permit Writer's Manual (Ecology Publication 92-109, July, 1994). The determination for benzidine resulted in an ambiguous determination, thus the discharger will be required in this permit to submit the needed data before the next permit reissuance. If monitoring data indicate a potential violation of the human health criteria during this permit term, specific action is required to attempt to determine the source of the pollutant. The Permittee is required in special condition S8 to submit and implement a plan to confirm the absence or presence and isolate possible source(s) of benzidine.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (Chapter 173-204-400 WAC).

FACT SHEET FOR NPDES PERMIT WA0037192
City of Aberdeen Wastewater Treatment Plant

Sediment samples were collected from ten sites in the Grays Harbor Estuary in 1988. Results indicated that the level of contamination was relatively low. Sediments are rapidly diluted by the high rate of suspended sediment discharge from the Chehalis River, seaward transportation of contaminants by the river, and removal of sediment accumulations through routine dredging of the navigation channel.

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED June 22, 1990

Proposed Limitations Based on Available Technology

Parameter	Previous Limits		Proposed Limits	
	Average Monthly Limit	Average Weekly Limit	Average Monthly Limit	Average Weekly Limit
BOD5	30 mg/L 977 lbs/day	45 mg/L 1465 lbs/day	30 mg/L 977 lbs/day	45 mg/L 1465 lbs/day
TSS	30 mg/L 1073 lbs/day	45 mg/L 1610 lbs/day	30 mg/L 1073 lbs/day	45 mg/L 1610 lbs/day
Fecal Coliform Bacteria	200/100 ml	400/100 ml	200/100 ml	400/100 ml
Flow	8.75 MGD	N/A	8.75 MGD	N/A
pH	Within the range 6.0 to 9.0		Within the range 6.0 to 9.0	

Proposed Limitations Based on Water Quality Standards

Parameter	Previous Limits		Interim Limits		Final Limits	
	Average Monthly Limit	Maximum Daily Limit	Average Monthly Limit	Maximum Daily Limit	Average Monthly Limit	Maximum Daily Limit
Total Residual Chlorine	N/A	0.75 mg/L	0.5 mg/L	0.75 mg/L	0.100 mg/L	0.270 mg/L
Ammonia, as N	N/A		90 mg/L	N/A	39 mg/L	89 mg/L

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with the requirements of the previous permit.

Additional monitoring is required in order to further characterize the effluent. This information is required by EPA under new rules for POTW permit application. These monitored pollutants could have a significant impact on the quality of the surface water.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. The laboratory at this facility is accredited for the routine general chemistry and microbiology tests frequently required.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, Chapter 90.48.110 RCW and Chapter 173-220-150 WAC require the Permittee to take the actions detailed in proposed permit requirement S.4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. The City is already planning expansions to address excessive flows to the POTW. Condition S.4. restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains Condition S.5. as authorized under Chapter 90.48.110 RCW, Chapter 173-220-150 WAC, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the Grays Harbor County Health Department.

PRETREATMENT

The Aberdeen POTW receives wastewater from three industrial users. The closed Aberdeen landfill trucks leachate from its collection system intermittently to the headworks. The Port of Grays Harbor and Weyco Sort Yard in Cosmopolis discharge wastewater from equipment washing to the sanitary sewer system. All three are under permit from the Department.

FEDERAL AND STATE PRETREATMENT PROGRAM REQUIREMENTS

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), the Department has been delegated authority to administer the Pretreatment Program [i.e. act as the Approval Authority for oversight of delegated Publicly Owned Treatment Works (POTWs)]. Under this delegation of authority, the Department has exercised the option of issuing wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue wastewater discharge permits.

The Department is responsible for issuing state waste discharge permits to SIUs and other industrial users of the Permittee's sewer system. Industrial dischargers must obtain these permits from the Department prior to the Permittee accepting the discharge (Chapter 173-216-110(5) WAC) (Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit. Such dischargers should contact the Department to determine if a permit is required.). Industrial dischargers need to apply for a state waste discharge permit sixty days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges, loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with state water quality standards and biosolids standards.

The POTW's NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from the Department. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities [40 CFR 403.12(j) and Chapter 173-216-070 WAC and Chapter 173-240-110 WAC, et seq.].

WASTEWATER PERMIT REQUIRED

Chapter 90.48 RCW and Chapter 173-216-040 WAC require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without authorization from the Department.

REQUIREMENTS FOR ROUTINE IDENTIFICATION AND REPORTING OF INDUSTRIAL USERS

The NPDES permit requires non-delegated POTWs to "take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the Permittee's sewerage system." Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet-unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify an industrial discharger, in writing, of their responsibilities regarding application for a state waste discharge permit and to send a copy of the written notification to the Department. The Department will then take steps to solicit a state waste discharge permit application.

REQUIREMENTS FOR PERFORMING AN INDUSTRIAL USER SURVEY

This POTW has the potential to serve significant industrial or commercial users and is required to perform an Industrial User Survey. The goal of this survey is to develop a list of SIUs and PSIUs, and of equal importance, to provide sufficient information about industries which discharge to the POTW, to determine which of them require issuance of state waste discharge permits or other regulatory controls. An Industrial User Survey is an important part of the regulatory process used to prevent interference with treatment processes at the POTW and to prevent the exceedance of water quality standards. The Industrial User Survey also can be used to contribute to the maintenance of sludge quality, so that sludge can be a useful biosolids product rather than an expensive waste problem. An Industrial User Survey is a rigorous method for identifying existing, new, and proposed significant industrial users and potential significant industrial users. A complete listing of methodologies is available in the Department of Ecology guidance document entitled "Conducting an Industrial User Survey."

DUTY TO ENFORCE DISCHARGE PROHIBITIONS

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants that cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet.

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition wastes with excessive BOD, petroleum based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on Chapter 173-216-060 WAC.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

SCHEDULE OF COMPLIANCE

The use of a schedule of compliance to meet final water quality based limitations is authorized by Chapter 173-201A WAC. Annual milestones are required under federal regulation in order to document continued progress in achieving the final limits.

The Permittee could have received a limitation on the toxic pollutant benzidine, but the limit would have been less than the current ability of laboratories to quantify or even to detect. Since there is some doubt as to the reality of the presence of benzidine in the Permittee's discharge, monitoring for benzidine will continue, implementation of an action plan to track the source of benzidine if detected is required, but a limit will not be placed in the permit at this time. Discharge of benzidine in any amount is not authorized by this permit.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

Metcalf and Eddy

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Washington State Department of Ecology.

CH2M Hill

1996. Outfall Mixing Zone Modeling Report, City of Aberdeen Wastewater Treatment Plant

Ecology

1994. Permit Writer's Manual. Publication Number 92-109.

1997. City of Aberdeen WWTP Class 2 Inspection. Publication Number 97-331.

2000. Grays harbor Fecal Coliform Total Maximum Daily Load Study. Publication Number 00-03-020

Water Pollution Control Federation

1976. Chlorination of Wastewater.

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on October 8, 2000, and October 15, 2000, in *The Aberdeen Daily World* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on September 15, 2000, in *The Aberdeen Daily World* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, Washington 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6300, or by writing to the address listed above.

This permit and fact sheet were written by Mike Herold.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for “all known, available, and reasonable methods of prevention, control, and treatment”.

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility, including the collection system and associated devices.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring --Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both: Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both state and federal laws.

Overflow --An unintentional discharge from the treatment system, including collection system and associated devices, which occurs when the volume of water exceeds the capacity of the transport or containment system. Overflows which result in a discharge to waters of the state are not authorized unless such authorization is specifically stated in an order or permit.

Pass through -- A discharge which exits the POTW into waters of the-state in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of state water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges $< 25,000$ gallons per day or;
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel[®] spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at <http://www.wa.gov.ecology>.

APPENDIX D--RESPONSE TO COMMENTS

The City of Aberdeen and Friends of Grays Harbor (FOGH) submitted comments to the department regarding the draft NPDES permit for wastewater discharge from the sewage treatment plant operated by the City of Aberdeen. The response to each substantive comment and changes in the final permit, if any, are presented in this document.

Comments from FOGH:

1. **Comment:**

FOGH requested consideration that the permit may be based on outdated information from a facility plan that was submitted by the city on December 31, 1996.

Response:

The permit was based on the application submitted by the city on December 1, 1999. A new facility plan was submitted in July, 2000 but not yet approved. The permit addresses the current situation at the facility rather than assuming that planned modifications and additional systems that might trigger modification of permit conditions will be implemented. If changes to the facility warrant modification of the permit prior to permit renewal, permit modification will be considered. Several general conditions of the permit address this possibility.

No change to the permit as a result of this comment.

Comments from City of Aberdeen:

1. **Comment:**

The City requested that the current group III classification of the STP not be changed since the filtration plant that causes an upgrade to a group IV classification may not be used or needed if recent strategies to reduce infiltration and inflow are successful. The filtration plant would, in any event, be used only during high flow periods and therefore the facility would be a tertiary treatment plant on an infrequent basis.

Response:

The state regulation governing the classification of STPs (Chapter 173-230 WAC) establishes the certification level of STP operators based on the design flow and complexity of the facility. According to the treatment plant classification criteria, the Aberdeen STP, with a filtration plant that constitutes tertiary treatment and design flow rate greater than 5 MGD, requires a group IV classification. Were it not for the presence of the filtration plant, the STP would be classified as a group III due to the activated sludge process and a design flow rate less than 10 MGD. The regulation allows classification in a different group when the conditions of flow require a high degree of operational control. The historical problems with inflow and infiltration require a high degree of operational control.

The dept considered requiring the group IV classification during periods when the filtration plant might be needed on line, the winter months when excess flow would more likely occur or to require the group IV classification when the filtration plant is in use or when flows exceed 10 MGD. The logistics of variable staffing level requirements could be difficult to manage unless Group IV certified staff were normally present.

The regulation is clear that a Group IV certification is required and the city currently meets the regulation. **Until such time that the filtration plant is proven to not be needed and flows do not exceed 10 MGD, the group IV classification from the draft permit is retained.**

2. **Comment:**

The City noted that the permit requires “continuous monitoring” of Significant Industrial Users (SIUs). However, there are no SIUs discharging to the STP at this time nor planned in the future.

Response:

The permits issued by the dept contain language that do not always have relevance for every discharger. In this case, the requirements that apply to STPs that have a discharge from an SIU will apply to Aberdeen if and when a SIU discharges in the future.

The draft permit does not require continuous monitoring of SIUs but rather requires “continual, routine measures to identify all existing, new, and proposed SIUs and potential SIUs.” Continual, routine measures include a system in place by the city wherein Industrial Users are periodically surveyed and identified. The fact sheet contains a section explaining the pretreatment requirements including examples of “continuous, routine measures to identify all existing, new, and proposed SIUs and potential SIUs.”

No change to the permit as a result of this comment.

3. **Comment:**

The City requested that the implementation of final chlorine limitations be delayed into the next permit cycle. There is some uncertainty over the capability of the present dechlorination system to consistently achieve the final limit during high flow periods. The construction of a new disinfection system is not planned before 2005.

Response:

The chlorine limit is a water quality-based limit necessary to protect aquatic organisms from the toxic effects of chlorine outside of the effluent mixing zone. The state has adopted water quality criteria for chlorine in WAC 173-201A. Federal and state law require that permits place effluent limits on discharges that have a reasonable potential to cause or contribute to a water quality standards violation. State law also allows the use of mixing zones and schedules of compliance to achieve the limits needed to meet the standards. The schedules of compliance are to “generally not exceed the term of the permit.”

The implementation of the final chlorine limit will be delayed until the final year of the permit term. The city will maintain the dechlorination system in order to minimize final effluent chlorine levels well below the interim limits. Experience with high effluent flow periods should increase the ability of the city to minimize periods of excess chlorine levels in the future. Whole effluent toxicity testing (WET) may be delayed until the final chlorine limits are effective. **Submittal dates for WET are also delayed in the final permit in accordance with department policy.**

4. **Comment:**

The City requested that no ammonia limit be placed in the permit, be delayed until September, 2005, and that the effluent mixing zone modeling be reexamined for the purpose of altering the permit limitations.

Response:

The mixing zone analyses conducted by CH2M Hill in 1996 is the basis for the mixing ratios used in the permit modification of 1997 and in this permit. The department relies on techniques for determining reasonable potential and effluent limits developed by USEPA. These techniques contained in the EPA publication Technical Support Document for Water Quality-based Toxics Control (1991) were followed during the development of this permit.

One critical factor in calculating limits and determining reasonable potential is the choice of chronic and acute mixing ratios. The usual approach is to determine the critical condition, that is, the situation where the mixing ratio between the effluent and ambient water is the least.

The Aberdeen situation is somewhat unusual in that the critical condition for mixing occurs in the winter months when the discharge location exhibits conditions that are river-like and effluent flows due to excessive infiltration are highest. The wet season effluent concentrations are relatively low and the toxic effect of ammonia is not as pronounced in colder, wet season waters. There is no reasonable potential of toxicity during the winter months (November-April) when the lowest mixing ratios occur.

In recognition that the toxicity of ammonia is greater in warm water, the critical condition for ammonia may be during the summer even though mixing ratios may be higher. The chronic summer season (May-October) mixing ratio erroneously applied in the draft permit (26:1) was based on model runs that matched the highest winter effluent flows (15 MGD) to summer ambient conditions. When the observed summer maximum chronic flows (9.4MGD) are considered as the basis for worst case summer mixing scenarios, enough dilution is provided (33:1) so that reasonable potential does not exist during the summer months as well as during the winter months.

Ammonia monitoring will continue but the seasonal limit for ammonia concentration will be eliminated.

Ammonia and other toxics will be reevaluated during the next permit renewal. Planned facility changes, additional flow and additional treatment capacity may change the assumptions from which the mixing ratios are derived.

A thorough data set of effluent ammonia values was also supplied after the issuance of the draft permit in order to apply the methodology recommended in the Permit Writer's Manual for estimating the 95th percentile from large data sets. An alternative coefficient of variation and upper 95th percentile value for ammonia concentration in the effluent is presented in the attached spreadsheet.

Other changes as a result of the above:

The permit issuance was delayed by six months. **Dates for submittals and completion of tasks are adjusted as appropriate in the permit.**

APPENDIX D--RESPONSE TO COMMENTS

The City of Aberdeen and Friends of Grays Harbor (FOGH) submitted comments to the department regarding the draft NPDES permit for wastewater discharge from the sewage treatment plant operated by the City of Aberdeen. The response to each substantive comment and changes in the final permit, if any, are presented in this document.

Comments from FOGH:

2. **Comment:**

FOGH requested consideration that the permit may be based on outdated information from a facility plan that was submitted by the city on December 31, 1996.

Response:

The permit was based on the application submitted by the city on December 1, 1999. A new facility plan was submitted in July, 2000 but not yet approved. The permit addresses the current situation at the facility rather than assuming that planned modifications and additional systems that might trigger modification of permit conditions will be implemented. If changes to the facility warrant modification of the permit prior to permit renewal, permit modification will be considered. Several general conditions of the permit address this possibility.

No change to the permit as a result of this comment.

Comments from City of Aberdeen:

5. **Comment:**

The City requested that the current group III classification of the STP not be changed since the filtration plant that causes an upgrade to a group IV classification may not be used or needed if recent strategies to reduce infiltration and inflow are successful. The filtration plant would, in any event, be used only during high flow periods and therefore the facility would be a tertiary treatment plant on an infrequent basis.

Response:

The state regulation governing the classification of STPs (Chapter 173-230 WAC) establishes the certification level of STP operators based on the design flow and complexity of the facility. According to the treatment plant classification criteria, the Aberdeen STP, with a filtration plant that constitutes tertiary treatment and design flow rate greater than 5 MGD, requires a group IV classification. Were it not for the presence of the filtration plant, the STP would be classified as a group III due to the activated sludge process and a design flow rate less than 10 MGD. The regulation allows classification in a different group when the conditions of flow require a high degree of operational control. The historical problems with inflow and infiltration require a high degree of operational control.

The dept considered requiring the group IV classification during periods when the filtration plant might be needed on line, the winter months when excess flow would more likely occur or to require the group IV classification when the filtration plant is in use or when flows exceed 10 MGD. The logistics of variable staffing level requirements could be difficult to manage unless Group IV certified staff were normally present.

The regulation is clear that a Group IV certification is required and the city currently meets the regulation. **Until such time that the filtration plant is proven to not be needed and flows do not exceed 10 MGD, the group IV classification from the draft permit is retained.**

6. **Comment:**

The City noted that the permit requires “continuous monitoring” of Significant Industrial Users (SIUs). However, there are no SIUs discharging to the STP at this time nor planned in the future.

Response:

The permits issued by the dept contain language that do not always have relevance for every discharger. In this case, the requirements that apply to STPs that have a discharge from an SIU will apply to Aberdeen if and when a SIU discharges in the future.

The draft permit does not require continuous monitoring of SIUs but rather requires “continual, routine measures to identify all existing, new, and proposed SIUs and potential SIUs.” Continual, routine measures include a system in place by the city wherein Industrial Users are periodically surveyed and identified. The fact sheet contains a section explaining the pretreatment requirements including examples of “continuous, routine measures to identify all existing, new, and proposed SIUs and potential SIUs.”

No change to the permit as a result of this comment.

7. **Comment:**

The City requested that the implementation of final chlorine limitations be delayed into the next permit cycle. There is some uncertainty over the capability of the present dechlorination system to consistently achieve the final limit during high flow periods. The construction of a new disinfection system is not planned before 2005.

Response:

The chlorine limit is a water quality-based limit necessary to protect aquatic organisms from the toxic effects of chlorine outside of the effluent mixing zone. The state has adopted water quality criteria for chlorine in WAC 173-201A. Federal and state law require that permits place effluent limits on discharges that have a reasonable potential to cause or contribute to a water quality standards violation. State law also allows the use of mixing zones and schedules of compliance to achieve the limits needed to meet the standards. The schedules of compliance are to “generally not exceed the term of the permit.”

The implementation of the final chlorine limit will be delayed until the final year of the permit term. The city will maintain the dechlorination system in order to minimize final effluent chlorine levels well below the interim limits. Experience with high effluent flow periods should increase the ability of the city to minimize periods of excess chlorine levels in the future. Whole effluent toxicity testing (WET) may be delayed until the final chlorine limits are effective. **Submittal dates for WET are also delayed in the final permit in accordance with department policy.**

8. **Comment:**

The City requested that no ammonia limit be placed in the permit, be delayed until September, 2005, and that the effluent mixing zone modeling be reexamined for the purpose of altering the permit limitations.

Response:

The mixing zone analyses conducted by CH2M Hill in 1996 is the basis for the mixing ratios used in the permit modification of 1997 and in this permit. The department relies on techniques for determining reasonable potential and effluent limits developed by USEPA. These techniques contained in the EPA publication Technical Support Document for Water Quality-based Toxics Control (1991) were followed during the development of this permit.

One critical factor in calculating limits and determining reasonable potential is the choice of chronic and acute mixing ratios. The usual approach is to determine the critical condition, that is, the situation where the mixing ratio between the effluent and ambient water is the least.

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Other changes as a result of the above:

The permit issuance was delayed by six months. **Dates for submittals and completion of tasks are adjusted as appropriate in the permit.**